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SPECIFICATION FOR AGAR, MICROBIOLOGICAL GRADE

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SPECIFICATION FOR AGAR, MICROBIOLOGICAL GRADE

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SPECIFICATION FOR AGAR, MICROBIOLOGICAL GRADE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 28 February 1973, after the draft finalized by the Food Hygiene, Sampling and Analysis Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Unless the ingredients used in media for microbiological work are of uniform quality, the results obtained might be erroneous and might be unreliable. Since the media used in different laboratories often differ greatly in their quality, the results of microbiological work at different laboratories cannot be compared. Therefore, with a view to unifying the practices of different laboratories dealing with microbiology and providing guidance to the indigenous manufacturers regarding the quality, it was decided to bring out a series of Indian Standard specifications for ingredients commonly used in media for microbiological work.

0.2.1 For specific purposes, any additional requirements shall be as agreed to between the purchaser and the supplier.

0.3 Agar is prepared from a variety of sea-weeds. In microbiological work, it is used as a solidifying agent for media. There is considerable variation in the quality of agar and depends upon the source of raw material, method of collection and subsequent manufacture. It is usually commercially available in bundles consisting of their membranous strips or in cut, flaked, granulated, or powdered forms.

0.4 This Institution has already published IS : 5707-1970* which covers the requirements for agar, food grade.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Specification for agar, food grade.

†Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the requirements and methods of test for agar, microbiological grade.

2. REQUIREMENTS

2.1 It shall be white to pale yellow in colour.

2.2 It shall form a clear solution just below 100°C when heated with excess of water. On cooling, a concentration of not more than 2 percent shall solidify to form a stable gel at not more than 40°C. This gel shall not liquefy below 85°C.

NOTE — The gel should be formed in a test tube with a thermometer immersed in it before setting the gel. The gel should be just sufficient to dip the mercury bulb. Heating should be indirect in a water bath heated on a hot plate with slow heat.

2.2.1 When autoclaved at 121°C for 30 minutes and then cooled, it shall form a stable gel.

2.2.2 After autoclaving twice at 121°C for 30 minutes, a 2 percent aqueous solution of agar shall maintain a stable gel on cooling.

2.3 The agar shall have clarity when dissolved in media and shall be reasonably free from any suspended material.

2.4 A 1·5 percent aqueous solution should have a *p*H between 6 and 8.

2.5 It shall not inhibit the growth of micro-organisms when it is incorporated in a medium. This may be tested in the following manner:

> Prepare nutrient agar medium using the agar under test. Inoculate three plates of the medium with a strain of *Escherichia coli*. Incubate at 37°C for 24 hours. There shall be no inhibition of growth of the micro-organism and the growth shall exhibit the normal characteristics of the strain.

2.6 The medium prepared with 1 to 2 percent of agar shall be firm when tested by streaking with a bacteriological loop.

2.7 It shall also conform to the requirements given in Table 1.

3. PACKING, STORAGE AND MARKING

3.1 Packing — The material shall be securely packed in well-filled wide mouth containers with tightly fitting lids.

3.2 Storage — The material shall be stored in a cool and dry place.

TABLE 1 REQUIREMENTS FOR AGAR, MICROBIOLOGICAL GRADE

(*Clause* 2.7)

Sl No.	Characteristic	Requirement	Method of Test, Ref to Cl No. of	
			Appenpix A	IS : 6854-1973*
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by mass, on drying at 105°C for five hours, *Max*	20	—	4
ii)	Total ash, percent by mass, *Max*	6·5	—	6
iii)	Acid insoluble ash, percent by mass, *Max*	1·0	—	7
iv)	Gelatin	To pass the test	A-1	—
v)	Insoluble matter, percent by mass, *Max*	1	A-2	—
vi)	Arsenic (as As), mg/kg, *Max*	3	—	12
vii)	Lead (as Pb), mg/kg, *Max*	10	—	14

*Methods of sampling and test for ingredients used in media for microbiological work.

3.3 Marking — Each container shall be marked legibly to give the following information:

a) Name of the material including the words ‘Microbiological Grade’,

b) Name and address of the manufacturer,

c) Minimum net content, and

d) Batch or code number.

3.3.1 The container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

4. SAMPLING

4.1 The representative samples of the material shall be drawn according to the method prescribed in **3** of IS : 6854-1973*.

5. TESTS

5.1 Tests shall be carried out by the methods prescribed in **2** and in col 4 and 5 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1960†) shall be employed in tests.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the experimental results.

APPENDIX A

(*Table* 1)

ANALYSIS OF AGAR, MICROBIOLOGICAL GRADE

A-1. GELATIN

A-1.1 Procedure — Dissolve about 1 g of the material in 100 ml of boiling water, and allow to cool to about 50°C. To 5 ml of the solution add 5 ml of trinitrophenol. No turbidity shall appear within 10 minutes.

A-2. INSOLUBLE MATTER

A-2.1 Procedure — To 7·5 g of the material add sufficient water to make 500 g, boil for 15 minutes, and re-adjust to the original weight. To 100 g of the mixture, add hot water to make 200 ml. Heat almost to boiling, filter while hot through a tared sintered glass crucible of G 4 or G 5 porosity, rinse the container with several portions of hot water, and pass the rinsings through the crucible. Dry the crucible and its contents at 105°C to constant weight, cool, and weigh. Calculate the percentage of insoluble matter.

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*Methods of sampling and test for ingredients used in media for microbiological work.

†Specification for water, distilled quality (*revised*).

INDIAN STANDARDS
ON
FOOD HYGIENE, SAMPLING AND ANALYSIS

IS:	
2491-1972	Code for hygiene conditions for food processing units (*first revision*)
5059-1969	Code for hygienic conditions for large scale biscuit manufacturing units and bakery units
5126 (Part I)-1969	Glossary of general terms for sensory evaluation of foods: Part I Methodology
5126 (Part II)-1969	Glossary of general terms for sensory evaluation of foods: Part II Quality characteristics
5398-1969	Methods of estimation of thiamine (vitamin B_1) in foodstuffs
5399-1969	Methods of estimation of reboflavin (vitamin B_2) in foodstuffs
5400-1969	Methods for estimation of nicotinic acid (niacin) in foodstuffs
5401-1969	Methods for detection and estimation of coliform bacteria in foodstuffs
5402-1969	Method for plate count of bacteria in foodstuffs
5403-1969	Method for yeast and mould count of foodstuffs
5404-1969	Code of practice for handling of food samples for microbiological analysis
5835-1970	Methods for estimation of vitamin D in foodstuffs
5837-1970	Code for hygienic conditions for soft drinks manufacturing units
5838-1970	Methods for estimation of vitamin C in foodstuffs
5839-1970	Code for hygienic conditions for manufacture, storage and sale of ice-creams
5886-1970	Methods for estimation of carotenes and vitamin A (retinol) in foodstuffs
5887-1970	Methods for detection of bacteria responsible for food poisoning and food-borne diseases
6540-1972	Code for hygienic conditions for manufacture and handling of ice for human consumption
6541-1972	Code for hygienic conditions for establishment and maintenance of mid-day school meal programme
6542-1972	Code for hygienic conditions for fruit and vegetable canning units
6850-1973	Agar, microbiological grade
6851-1973	Meat extract, microbiological grade
6852-1973	Bile salts, microbiological grade
6853-1973	Peptone, microbiological grade
6854-1973	Methods of sampling and test for ingredients used in media for microbiological work

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